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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,588	01/15/2004	Hajime Akimoto	HITA.0488	4908
7590 REED SMITH LLP Suite 1400 3110 Fairview Park Drive Falls Church, VA 22042			EXAMINER BODDIE, WILLIAM	
			ART UNIT 2629	PAPER NUMBER
			MAIL DATE 06/29/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/757,588

Applicant(s)

AKIMOTO ET AL.

Examiner

William L. Boddie

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

1. In an amendment dated, March 30th, 2007 the Applicant amended claims 1-2, 9, 13, 15-20 and cancelled claims 25-28. Currently claims 1-24 are pending.

Drawings

2. The drawings were received on March 30th, 2007. These drawings are accepted.

Response to Arguments

3. Applicant's arguments filed March 30th, 2007 have been fully considered but they are not persuasive.
4. On pages 13-14 of the Remarks, the Applicants traverse the 103 rejection of claim 1. Specifically the Applicants argue that Stewart does not function in the same manner as the current application, and would be unable to control turning on and off of the illuminating period. The Applicants continue to discuss how Stewart would allegedly be unable to operate in the same manner as the current invention.

While it may be true that Stewart is incapable, alone, of operating in the same manner as the current application, this alone does not negate the merits of the rejection. It has never been the Examiner's contention that Stewart operated in the same way as the Applicants' invention. Rather, Stewart was merely seen as prior art that disclosed applying constant voltages to a pixel during an entire illumination period of the pixel. It was this disclosure that was to be incorporated into the Akimoto reference.

To rephrase the combination of Akimoto and Stewart, Akimoto was seen as disclosing the vast majority of the claim limitations of claim 1. Akimoto discloses, applying triangular waveforms to the pixel during illumination periods. Akimoto goes on

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to contemplate applying other waveforms to attain different visual characteristics at the end of paragraph 48. Akimoto, however, was silent as to applying constant voltages to a pixel when said pixel had been selected to be illuminated. It seems clear to the Examiner that one of ordinary skill in the art would have been motivated to seek out additional waveforms to apply to the display device of Akimoto. Analogous art, Stewart discloses one such additional waveform, which involves applying a constant voltage during the entirety of an illuminating period for a pixel. It seems clear to the Examiner that one of ordinary skill in the art when presented with the constant current waveform of Stewart and the display device of Akimoto would be motivated to combine the two.

5. On page 14, the Applicants' argue unexpected properties of the invention. While there might indeed be unexpected properties of the current invention, the discussion on page 14 is not persuasive. Furthermore MPEP 716.01 (c) II states:

The arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). Examples of attorney statements which are not evidence and which must be supported by an appropriate affidavit or declaration include statements regarding unexpected results, commercial success, solution of a long-felt need, inoperability of the prior art, invention before the date of the reference, and allegations that the author(s) of the prior art derived the disclosed subject matter from the applicant. See MPEP § 2145 generally for case law pertinent to the consideration of applicant's rebuttal arguments.

As such lacking any affidavit or declaration by the Applicants, directly, the allegation of unexpected results is not persuasive.

6. On page 15 of the Remarks, the Applicants argue that Akimoto teaches away from linear/constant waveforms, and furthermore that the cited motivation only applies to variants on triangular waveforms.

The Examiner respectfully disagrees. While Akimoto does apply triangular waveforms and proposes other variants of triangular waveforms, Akimoto does not expressly disclose that constant voltage waveforms either will not work or should not be applied to the newly designed pixel structure. Furthermore, Akimoto does not specifically limit the applied waveforms to triangular waveforms by the inclusion of "etc." Additionally, it would seem obvious to those of ordinary skill in the art that when prompted to attempt different variations of triangular waveforms that they would be inclined to then attempt other waveforms not expressly disclosed by Akimoto. As such the motivation of attaining different visual characteristics is seen as sufficient.

7. On pages 15-16 of the Remarks the Applicants argue that Akimoto should be disqualified from being cited as a prior art reference under 35 U.S.C. 103 (c)(1).

The Examiner respectfully disagrees. As clearly stated by the code,

"Subject matter developed by another person, which qualifies as prior art **only** under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section" (emphasis added).

In the instant case, the Akimoto reference contains a very different inventive entity and as such is seen as being developed by another person. Furthermore, and most importantly, the Akimoto reference was published as a Patent Application Publication on April 10, 2003. This publication date is prior to the current applications effective filing date of May 15, 2003. As such the Akimoto reference qualifies as prior art under **both** (a) and (e) subsections of section 102; and the 103 (c)(1) conditions are not met. Therefore Akimoto is available as a prior art reference in a 103(a) rejection.

As shown above the arguments presented by the Applicants are not persuasive and the rejections are updated to accommodate the amendments and maintained.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-4, 6-7, 9, 12-15, 17-18, 20 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al. (US 2003/0067424) in view of Stewart (US 5,302,966).

With respect to claim 1, Akimoto discloses, an image display device (fig. 1), comprising:

a display part configured by a plurality of pixels (clear from fig. 1) each having an electro-luminescent element driven to illuminate according to a display signal voltage (7 in fig. 1);

a signal line (17 in fig. 1) used to write said display signal voltage in said pixel (see write period in fig. 2);

a pixel selector (22 in fig. 1) for selecting a pixel from said plurality of pixels so as to write said display signal voltage therein through said signal line;

a display signal voltage generator (21 in fig. 1) for generating said display signal voltage;

an illuminating state controller (32, 9 in fig. 1) for controlling a selection of illuminating state or non-illuminating state for each of said plurality of pixels at a time;

wherein one end of said electro-luminescent element provided in each said pixel is connected to a common power supply (common terminal connected to the element in fig. 1; also see end of para. 51) while the other end of said electro-luminescent element is connected to a first source/drain electrode of an electro-luminescent element driving transistor (4 in fig. 1) through a first switch (9 in fig. 1),

a second source/drain electrode of said electro-luminescent element driving transistor is connected to a power supply line (18 in fig. 1; para. 43), and

the gate of said electro-luminescent element driving transistor (4 in fig. 1) is connected to the first source/drain electrode of said electro-luminescent element driving transistor through a second switch (5 in fig. 1).

Akimoto further discloses, a constant voltage supply, as evidenced by the signal line data during the write period in figure three. During an illumination period, Akimoto supplies a triangular signal amplitude as seen in figure three.

Akimoto does not expressly disclose supplying a constant voltage to each pixel during the illuminating state.

Stewart discloses, an image display device having an electro-luminescent element pixel circuit (42 in fig. 2a), wherein a constant voltage supply (64, 62 in fig. 2a) provides a constant voltage to the pixel through a signal line (48 in fig. 2a) when said illuminating state is selected for said selected pixel (col. 3, lines 32-34).

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Stewart and Akimoto are analogous art because they are both from the same field of endeavor namely pixel control circuitry and driving methods for electro-luminescent display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the triangular signal amplitude of Akimoto with the constant hold voltage of Stewart.

The motivation for doing so would have been to attain different visual characteristics (Akimoto; end of para. 48).

With respect to claim 2, Akimoto and Stewart disclose, the image display device according to claim 1 (see above).

Akimoto further discloses, wherein the gate of said electro-luminescent element driving transistor is connected to said signal line corresponding to each pixel through a connection capacitor (2 in fig. 1).

With respect to claim 3, Akimoto and Stewart disclose, the image display device according to claim 2 (see above).

Akimoto further discloses, wherein said first source/drain electrode is a drain electrode and said second source/drain electrode is a source electrode (para. 43).

With respect to claim 4, Akimoto and Stewart disclose, the image display device according to claim 2 (see above).

Akimoto further discloses, wherein each of said first switch, said second switch, and said electro-luminescent element driving transistor is a p-channel transistor (fig. 4; also see para. 62).

With respect to claim 6, Akimoto and Stewart disclose, the image display device according to claim 2 (see above).

Akimoto further discloses, wherein each of said first switch, said second switch, and said electro-luminescent element driving transistor is a polycrystalline silicon thin film transistor (para. 43).

With respect to claim 7, Akimoto and Stewart disclose, the image display device according to claim 2 (see above).

Akimoto further discloses, wherein each of said first switch, said second switch, and said electro-luminescent element driving transistor is an n-channel transistor (fig. 6; also see para. 69).

With respect to claim 9, Akimoto and Stewart disclose, the image display device according to claim 2 (see above).

Akimoto fails to disclose the use of amorphous silicon thin film transistors.

Stewart further discloses, the use of amorphous silicon thin film transistors (col. 7, line 67 – col. 8, line 5).

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the transistors of Akimoto with the amorphous silicon thin film transistors of Stewart.

The motivation for doing so would have been the well known in the art advantage that amorphous silicon thin film transistors are more uniform over large areas than polycrystalline silicon thin film transistors.

With respect to claim 12, Akimoto and Stewart disclose, the image display device according to claim 2 (see above).

Akimoto further discloses, wherein said electro-luminescent element driving transistor is actually driving in a sub-threshold area in which its gate-source voltage is a threshold voltage and under (para. 47).

With respect to claim 13, Akimoto and Stewart disclose, the image display device according to claim 1 (see above).

Akimoto further discloses, wherein one end of the signal line is connected to the display signal voltage generator through a third switch (5 in fig. 1; clear from fig. 1, that the signal line [17] is connected to the display signal voltage generator [21]).

With respect to claims 14-15, 17-18, 20 and 23, as these claims are identical to previously rejected claims 3-4, 6-7, 9 and 12, respectively, these claims are rejected on the same merits shown above.

With respect to claim 24, Akimoto and Stewart disclose, the image display device according to claim 1 (see above).

Akimoto further discloses, wherein selection of said illuminating/non-illuminating state is repeated in each frame period (clear from fig. 21, that the operation repeats indefinitely).

10. Claims 5, 8, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al. (US 2003/0067424) in view of Stewart (US 5,302,966) and further in view of Misawa et al. (US 5,250,931).

With respect to claim 5, Akimoto and Stewart disclose, the image display device according to claim 2 (see above).

Akimoto further discloses, wherein each of said first switch, said second switch, and said electro-luminescent element driving transistor is configured as a p-channel transistor (see fig. 4; para. 62).

Neither Akimoto nor Stewart expressly disclose, that said connection capacitor is a MOS capacitor that uses a p-channel.

Misawa discloses, a pixel capacitor (305 in fig. 15a/b) that is a p-channel MOS capacitor (col. 14, lines 61-68).

Misawa, Akimoto and Stewart are analogous art because they are all from the same field of endeavor namely pixel control circuitry and driving methods for electro-luminescent display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to use the MOS capacitors taught by Misawa in the display device of Akimoto and Stewart.

The motivation for doing so would have been to lower the number of manufacturing steps to form the display device (Misawa; col. 14, lines 55-60).

With respect to claim 8, Akimoto and Stewart disclose, the image display device according to claim 2 (see above).

Akimoto further discloses, wherein each of said first switch, second switch, and said electro-luminescent element driving transistor is an n-channel transistor (fig. 6; also see para. 69).

Neither Akimoto nor Stewart expressly disclose, that said connection capacitor is a MOS capacitor that uses an n-channel.

Misawa discloses, a pixel capacitor (305 in fig. 15a/b) that is an n-channel MOS capacitor (col. 14, lines 61-68).

Misawa, Akimoto and Stewart are analogous art because they are all from the same field of endeavor namely pixel control circuitry and driving methods for electro-luminescent display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to use the MOS capacitors taught by Misawa in the display device of Akimoto and Stewart.

The motivation for doing so would have been to lower the number of manufacturing steps to form the display device (Misawa; col. 14, lines 55-60).

With respect to claims 16 and 19, as these claims are identical to previously rejected claims 5 and 8, respectively, these claims are rejected on the same merits shown above.

11. Claims 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al. (US 2003/0067424) in view of Stewart (US 5,302,966) and further in view of Akimoto et al. (US 6,670,936; hereinafter: Akimoto-'936).

With respect to claim 10, Akimoto and Stewart disclose, the image display device according to claim 2 (see above).

Akimoto further discloses, wherein said signal line and said power supply line are disposed in parallel (clear from fig. 1 that 17 and 18 are parallel).

Neither Akimoto nor Stewart expressly disclose, forming the signal line and power supply by processing the same metallic wiring layer.

Akimoto-'936 discloses, a signal line (4 in fig. 1) and a power supply line (8 in fig. 1) are disposed in parallel (clear from fig. 1) and formed by processing the same metallic wiring layer (col. 6, line 62 – col. 7, line 7).

Akimoto, Stewart and Akimoto-'936 are all analogous art because they are all form the same field of endeavor namely, pixel control circuitry and driving methods for image display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to construct the signal and power supply lines of Akimoto and Stewart on the same metallic wiring layer as taught by Akimoto-'936.

The motivation for doing so would have been to simplify the manufacturing process (Akimoto-'936; col. 7, lines 6-7).

With respect to claim 21, as this claim is identical to previously rejected claim 10, this claim is rejected on the same merits shown above.

12. Claims 11 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al. (US 2003/0067424) in view of Stewart (US 5,302,966) and further in view of Miyajima et al. (US 6,812,912).

With respect to claim 11, Akimoto and Stewart disclose, the image display device according to claim 2 (see above).

Neither Akimoto nor Stewart expressly disclose, that the connection capacitor is provided on the signal line in layers.

Miyajima discloses providing a capacitor (30 in fig. 14) that is provided on a signal line (data line; 22 in fig. 14) in layers (clear from fig. 15; also see col. 17, lines 41-48).

Akimoto, Stewart and Miyajima are all analogous art because they are all form the same field of endeavor namely, pixel control circuitry for image display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to construct the connection capacitor of Akimoto and Stewart on the signal line in layers as taught by Miyajima.

The motivation for doing so would have been to increase the contrast and display quality of the image display device (Miyajima; col. 18, lines 38-39).

With respect to claim 22, as this claim is identical to previously rejected claim 11, this claim is rejected on the same merits shown above.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Will L. Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Wlb
6/11/07


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